Docket No.: 220002071600
UC Ref. No. 2004-092-1
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Xiong GONG et al.

Application No.: 10/680,084	Confirmation No.: 9929
Filed: October 6, 2003	Art Unit: 1794
For: WHITE ELECTROPHOSPHORESCENCE FROM SEMICONDUCTING POLYMER BLENDS	Examiner: C. Thompson

DECLARATION OF INVENTORS UNDER 37 C.F.R. § 1.131

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

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Signed:

____________________ on July 27, 2009 at Goleta CA
Xiong Gong (City, State)

____________________ on July ______, 2009 at ____________________
Wanli Ma (City, State)

____________________________ on July ______, 2009 at _______________________________
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AUG 4 09

Signed:

_______________ on July ______, 2009 at _______________
Xiong Gong (City, State)

_______________ on July 30, 2009 at Berkeley, CA
Wanli Ma (City, State)

____________________________ on July ______, 2009 at ________________________________
Jacek Ostrowski (City, State)

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Each of us declares individually that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further, that these statements are made with the knowledge that willful, false statements and the like so made are punishable by fine or imprisonment or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Signed:

______________________________ on July ______, 2009 at ________________________________
Xiong Gong (City, State)

______________________________ on July ______, 2009 at ________________________________
Wanli Ma (City, State)

Jacek Ostrowski on July ______, 2009 at ________________ (City, State)

Guillermo C. Bazan on July 16, 2009 at Santa Barbara, CA (City, State)

Daniel Moses on July ______, 2009 at ________________ (City, State)

Alan J. Heeger on July ______, 2009 at ________________ (City, State)

Docket No.: 220002071600
UC Ref. No. 2004-092-1
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Xiong GONG et al.

Application No.: 10/680,084

Filed: October 6, 2003

For: WHITE ELECTROPHOSPHORESCENCE FROM SEMICONDUCTING POLYMER BLENDS

Confirmation No.: 9929

Art Unit: 1794

Examiner: C. Thompson

DECLARATION OF INVENTORS UNDER 37 C.F.R. § 1.131

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Madam:

We, Xiong Gong, Wanli Ma, Jacek Ostrowski, Guillermo C. Bazan, Daniel Moses, and Alan J. Heeger, declare as follows:

1. We are named as the inventors of the patent application referred to above.

2. Xiong Gong is currently a Senior Scientist and a Manager of Advanced Materials and Devices at CBRITE, Inc., Goleta, California; Wanli Ma is currently a Postdoctoral Fellow at the University of California, Berkeley; Jacek Ostrowski is currently Director of Technology at Chimeros, Inc., in California; Guillermo C. Bazan is currently a Professor of Chemistry and Materials, and Co-Director of the Center for Polymers and Organic Solids at the University of California, Santa Barbara; Daniel Moses is currently a Researcher at the Center for Polymers and

Organic Solids at the University of California, Santa Barbara; and Alan J. Heeger is currently a Professor of Physics and Materials Engineering at the University of California, Santa Barbara.

3. The University of California is the assignee of the application referred to above.

4. We are entitled to royalties on this patent application under the policies of the University of California. Each of us separately indicates the following: to the best of my knowledge and belief, I do not have any other financial interest in this patent application.

5. Several experiments were carried out on devices which are described by the claims of this patent application. Several pages from a notebook maintained by Xiong Gong are attached as Exhibit 1 to this declaration describing these experiments.

6. All of the work described in Dr. Gong's laboratory notebooks and in this declaration was carried out before December 28, 2001, and was performed by Dr. Gong in the United States of America. The dates have been removed from the notebook pages.

7. The top portion of page 77 of Dr. Gong's laboratory notebook shows several precursor solutions used to fabricate some of the devices. Solution 1 contains 4% poly(9,9-dioctyl)fluorene (PFO) in a dichloroethylene:toluene (DCE:toluene) solvent. Solution 2 is DCE:toluene solvent. Solution 3 is Iridium Compound C (Ir-C) at 1 weight percent in dichloroethylene (Ir-C 1 wt DCE). Solution 4 is Iridium Compound A (Ir-A) at 0.5 weight percent in dichloroethylene (Ir-A DCE 0.5 wt DCE). Iridium compound C is tris(2,5-bis-2'-(9',9'-dihexylfluorene)pyridine) iridium (III), or Ir(HFP)$_3$, which is shown in Figure 8 of this patent application. Iridium compound A is tris[9,9-dihexyl-2-(pyridinyl-2')fluorene] iridium (III), or (Ir(DPF)$_3$).

8. The middle portion of page 77 of Dr. Gong's notebook shows the various combinations of the precursor solutions used for some of the devices. The letters A, B, C, and D listed horizontally across the page correspond to solutions 1, 2, 3, and 4. The letters A and B listed vertically correspond to the device labeled "ITO/PEDOT/IA (PFO-Ir-A-Ir-C)/Ca/Ag" and the

device labeled "ITO/PEDOT/IB/Ca/Ag" on page 78, respectively. For the device in the row labeled A ("ITO/PEDOT/IA (PFO-Ir-A-Ir-C)/Ca/Ag"), Dr. Gong used 400 μl of solution 1, 176 μl of solution 2, 14 μl of solution 3, and 10 μl of solution 4 to prepare the emitting layer. For the device in the row labeled B ("ITO/PEDOT/IB/Ca/Ag"), Dr. Gong used 400 μl of solution 1, 176 μl of solution 2, 18 μl of solution 3, and 6 μl of solution 4 to prepare the emitting layer.

9. The lower portion of page 77 of Dr. Gong's notebook shows a different set of solutions used for preparing device emitting layers. Solution A is poly(*N*-vinylcarbazole) (PVK) and 2-(4-biphenylyl)-5-phenyl-1,3,4-oxadiazole (PBD, abbreviated as "P" in the notebook), at 5 weight percent in dichloroethylene (PVK + P 5 wt.-% DCE). Solution B is just the solvent dichloroethylene. Solution C was the same as solution 3 (1 weight percent of Ir-C in dichloroethylene) and solution D was the same as solution 4 (0.5 weight percent of Ir-A in dichloroethylene). As noted at the very bottom, Dr. Gong used 300 μl of solution A, 185 μl of solution B, 10 μl of solution C, and 5 μl of solution D to prepare one emitting layer using PVK-PBD as polymer host for the iridium compounds. This emitting layer formulation, labeled "B" on page 77, is the emitting layer used in the device labeled "ITO/PEDOT/IC/Ca/Ag" on page 79. Dr. Gong used 300 μl of solution A, 185 μl of solution B, 8 μl of solution C, and 7 μl of solution D to prepare another emitting layer with PVK-PBD as polymer host for the iridium compounds. This emitting layer formulation was labeled "C" on page 77 and is the emitting layer used in the device labeled "ITO/PEDOT/ID/Ca/Ag" on page 79.

10. The emitting layers, prepared as described above in paragraphs 8 and 9, were incorporated into devices according to the following procedure. An indium-tin oxide (ITO) anode was prepared, and a layer of the hole-injecting material poly(3,4-ethylenedioxythiophene) (PEDOT) was laid down on top of the ITO anode. The emitting layer was then spin-cast on top of the PEDOT layer. A layer of calcium was then deposited on top of the emitting layer, followed by a layer of silver to form the cathode.

11. The spectra of devices fabricated using the emitting layers is shown on pages 78 and 79. One page 78, spectra of the device labeled "ITO/PEDOT/IA (PFO-Ir-A-Ir-C)/Ca/Ag" and the

device labeled "ITO/PEDOT/IB/Ca/Ag" prepared as described in paragraphs 8 and 10, are shown. These spectra show white light emission. The devices shown on page 79, "ITO/PEDOT/IC/Ca/Ag" and "ITO/PEDOT/ID/Ca/Ag," prepared as described in paragraphs 9 and 10, did not show white light emission.

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Wanli Ma (City, State)

________________ on July ______, 2009 at ________________
Jacek Ostrowski (City, State)

________________ on July ______, 2009 at ________________
Guillermo C. Bazan (City, State)

3 5 19

D. Moses on July 20, 2009 at Santa Barbara, California
Daniel Moses (City, State)

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Alan J. Heeger (City, State)

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Jacek Ostrowski (City, State)

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Guillermo C. Bazan (City, State)

____________________ on July ______, 2009 at ____________________
Daniel Moses (City, State)

Alan J Heeger on July 17, 2009 at Santa Barbara, CA
Alan J. Heeger (City, State)